UniVista

Summer 2000 ERULF Project at PPPL

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Primary Problem

- Lots of Fortran Legacy Codes
- Poorly documented making them hard to use
- Drain on Code Authors
- Input is unnatural
- Keeping track of runs is difficult

Secondary Problem

- Desire to run codes on non-unix platforms

UniVista

- Solves the Legacy Fortran Problem
- Written in Java for cross-platform use
- Easy to utilize
- Database in background stores data about Runs

Three Stages of UniVista

- Code Editor
  - Used by code authors
  - Input Variables
  - Add Documentation
- Study Editor
  - Graphical interface to code
  - Different screens for same code
  - Allows for code organization

Three Stages of UniVista

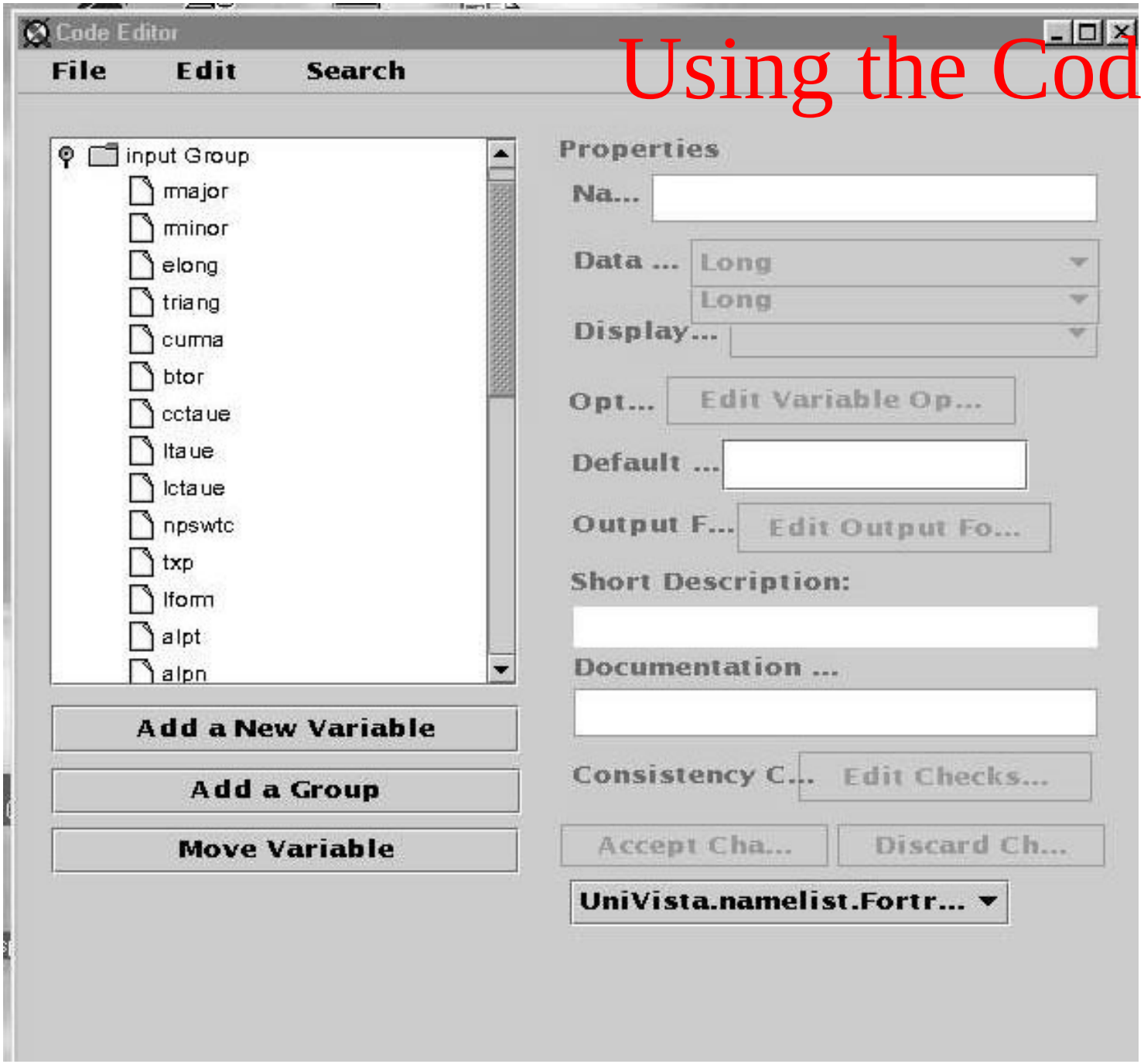
- Run Engine
  - Allows typical user to run code
  - Keeps track of input variables and runs

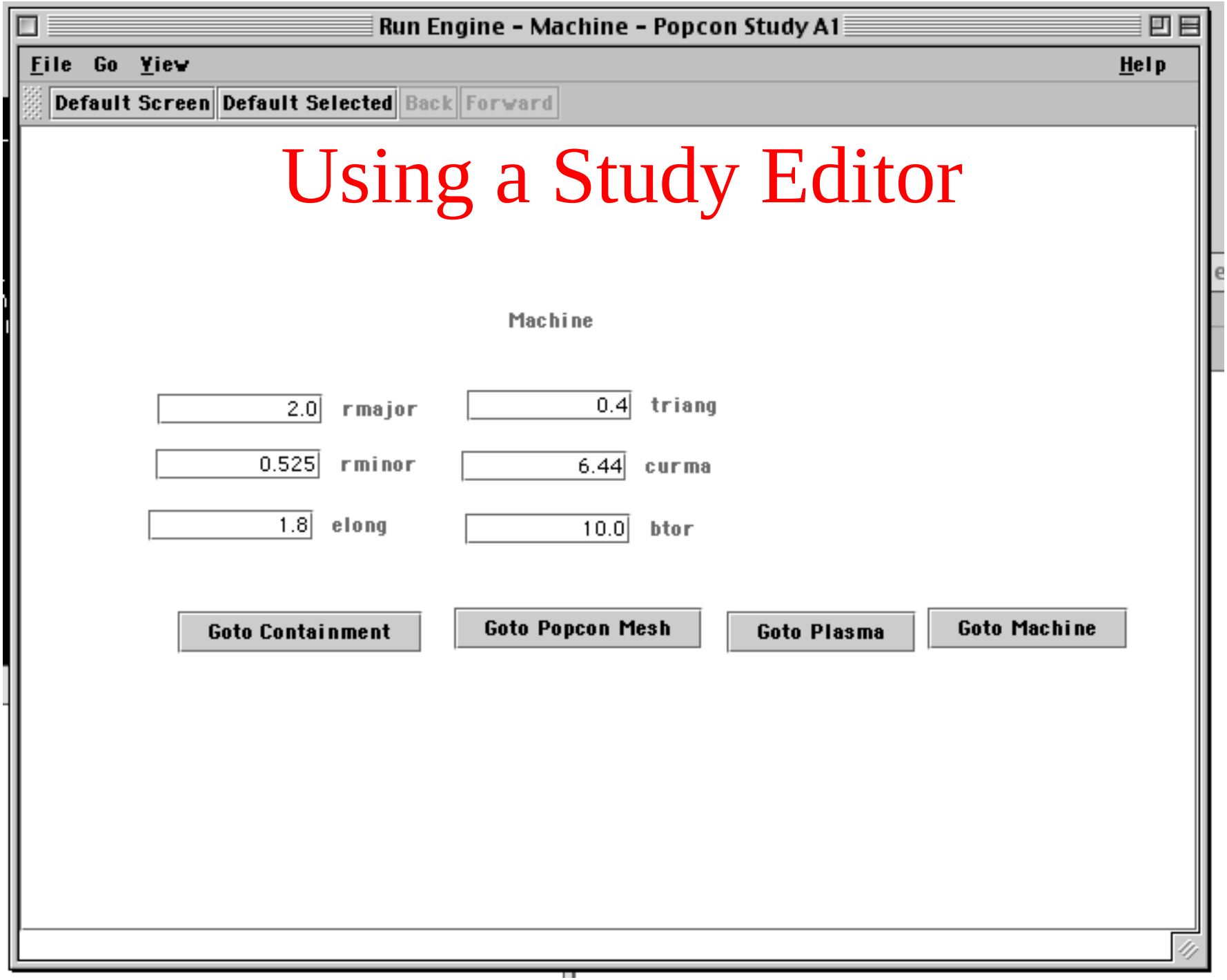
My role in UniVista

- Part of UniVista functionality already working
- Finish coding major aspects of UniVista functionality
- Debug UniVista to useable level
- Apply UniVista to Popcon

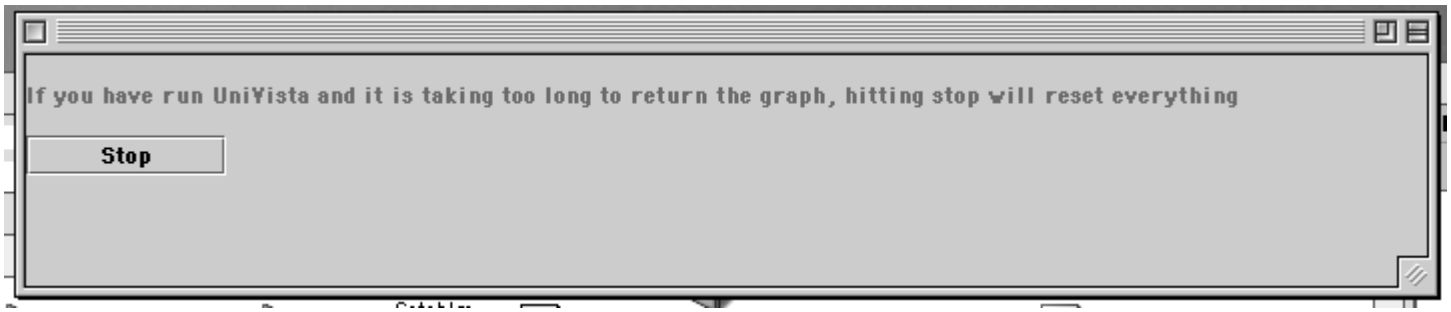
UniVista: A walk-through

Using the Code Editor

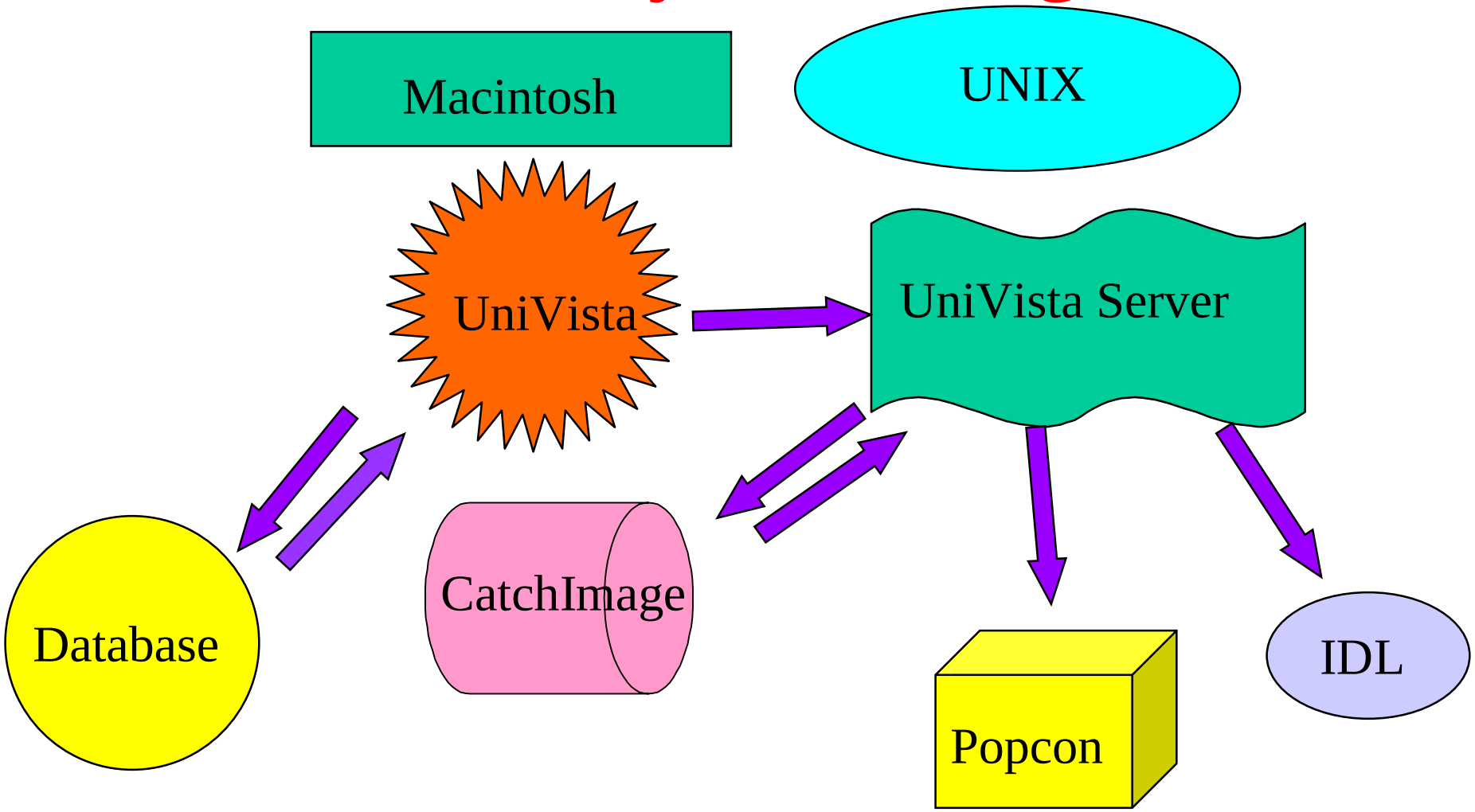


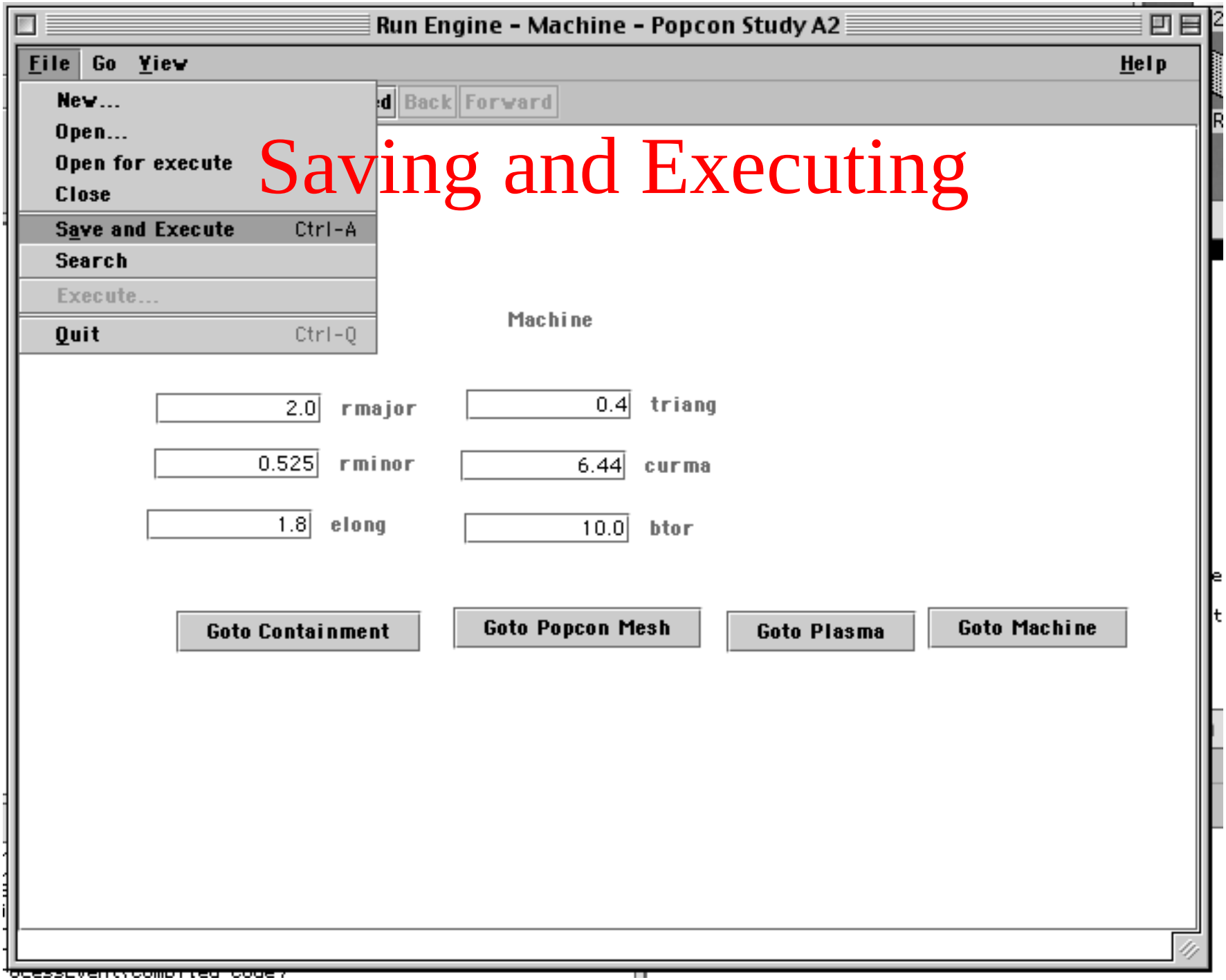

Run Engine - Machine - Popcon Study A1
File Go View
Help
Default Screen
Default Selected
Back
Forward
Using a Study Editor
Machine
2.0
rmajor
0.4
triang
0.525
rminor
6.44
curma
1.8
elong
10.0
btor
Goto Containment
Goto Popcon Mesh
Goto Plasma
Goto Machine

CatchImage

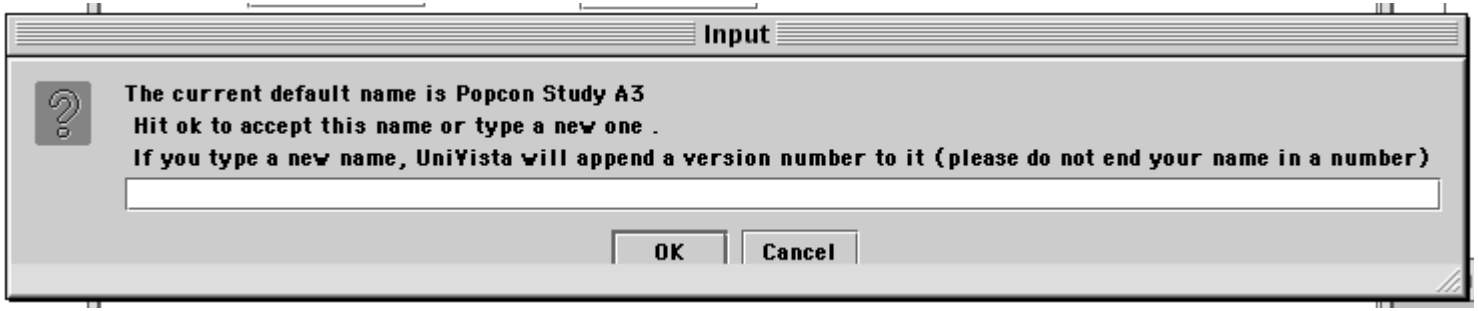

If you have run UniVista and it is taking too long to return the graph, hitting stop will reset everything
Stop

How they're talking

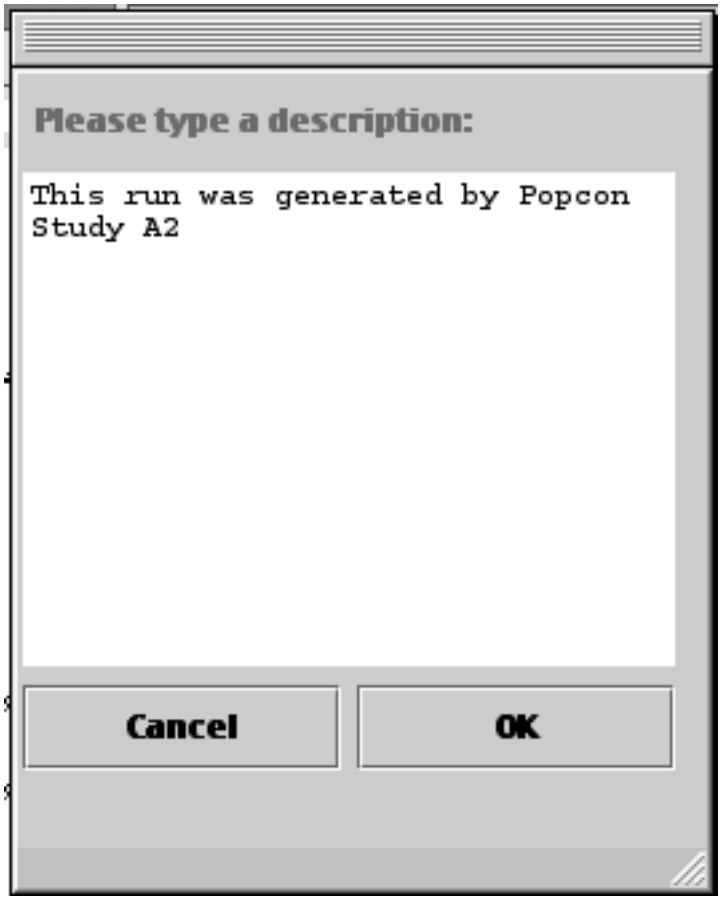



Run Engine - Machine - Popcon Study A2
File
Go
View
Help
New...
Open...
Open for execute
Close
Save and Execute Ctrl-A
Search
Execute...
Quit Ctrl-Q
Back
Forward
Saving and Executing
Machine
2.0
rmajor
0.4
triang
0.525
rminor
6.44
curma
1.8
elong
10.0
btor
Goto Containment
Goto Popcon Mesh
Goto Plasma
Goto Machine

Saving


Input
The current default name is Popcon Study A3
Hit ok to accept this name or type a new one .
If you type a new name, UniVista will append a version number to it (please do not end your name in a number)
OK
Cancel

Description

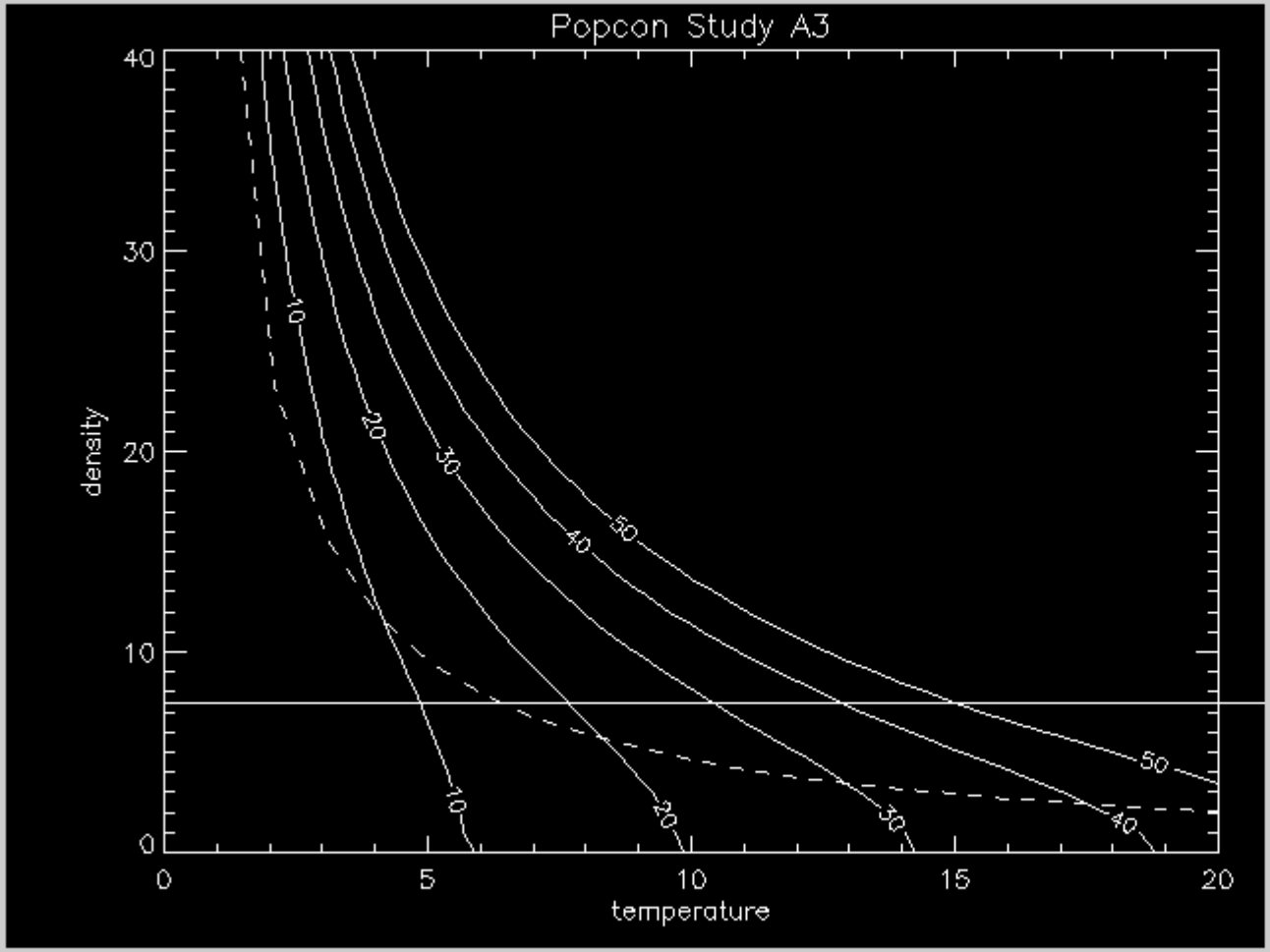


Execute


Do you wish to execute this program?
Do you wish to execute this program? Hitting no will just save the run so you can execute it later
Yes
No

Contours: 10,20,30,40,50
X Scale
Y Scale
Redraw G...
Print
Exit

Popcon Graph



IDL Graph

Contours: 10,20,25,30,50

X Scale 0,40

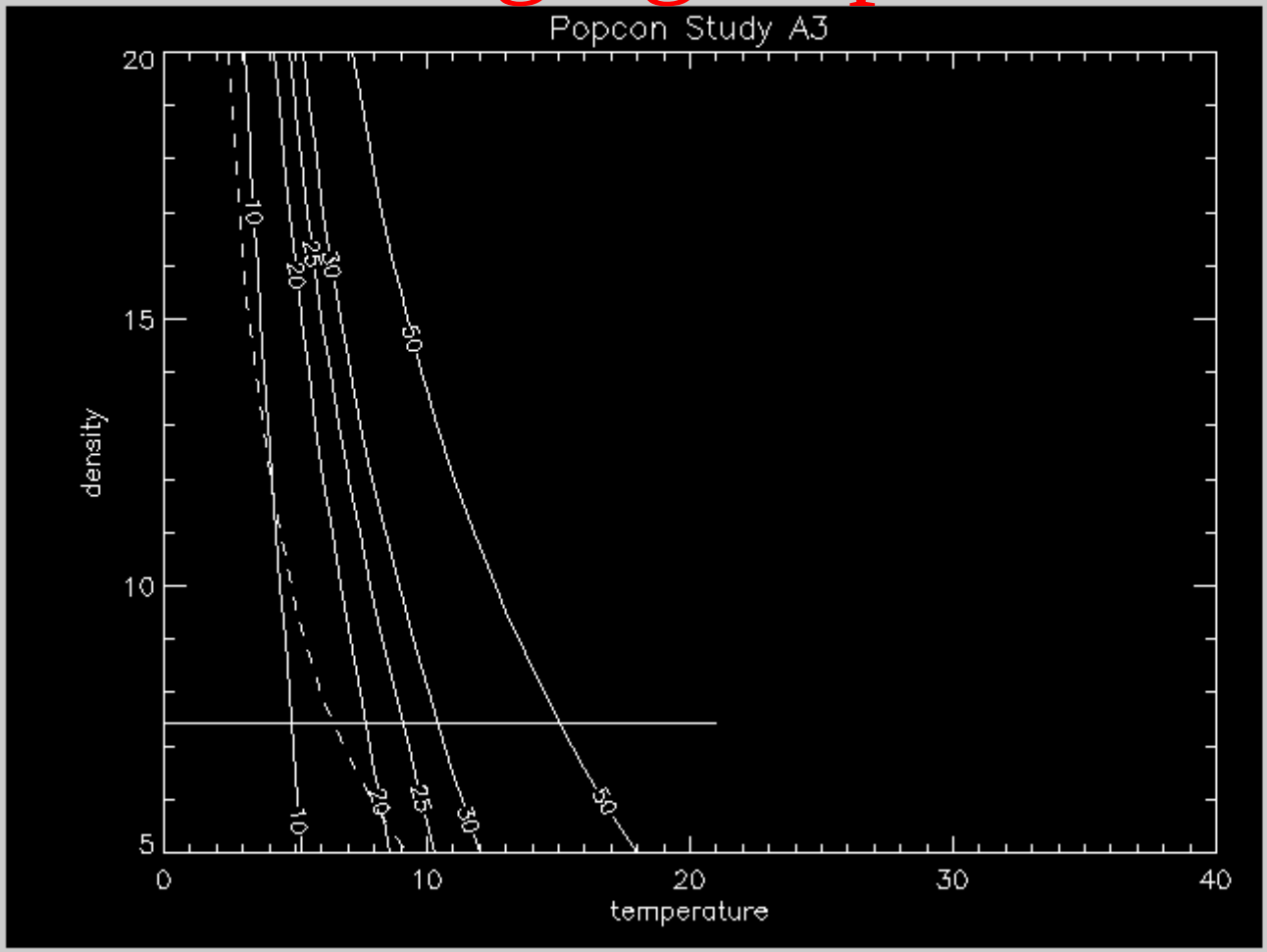
Y Scale 5,20

Redraw G...

Print

Exit

Enlarging Popcon Graphs



Possible Solution

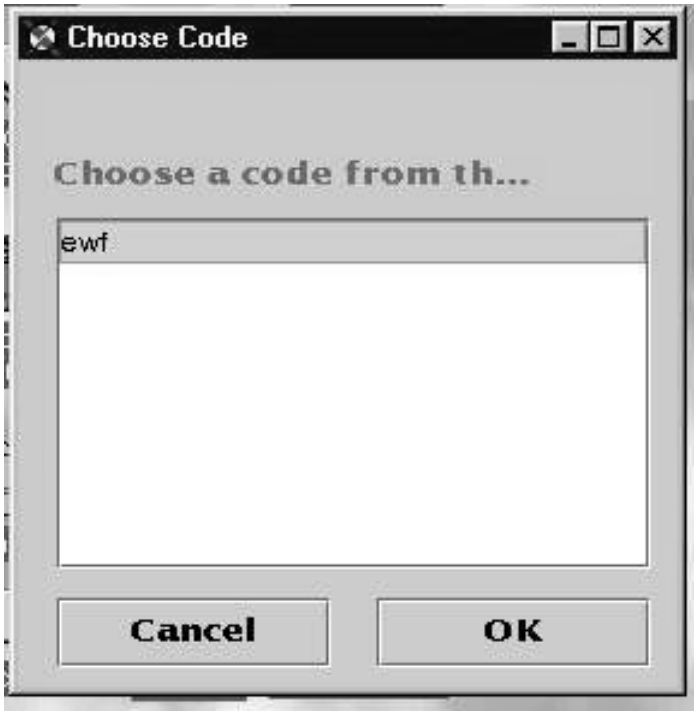
- Rewrite Fortran Codes
  - Time Consuming
  - Extensive Effort Required
- Universal Graphical Front End
  - Easy for code authors to construct graphical interface to their codes
  - Easy for users of codes to graphically run the codes
  - Effective method of keeping track runs and the input variables associated with them.

Popcon Issues

- Popcon is used to look for ignition regions in reactor parameter spaces.
- Make Popcon useable on a Macintosh
- Allow for Graphs to be displayed on Macintosh

CodeEditor: Creating Code

or



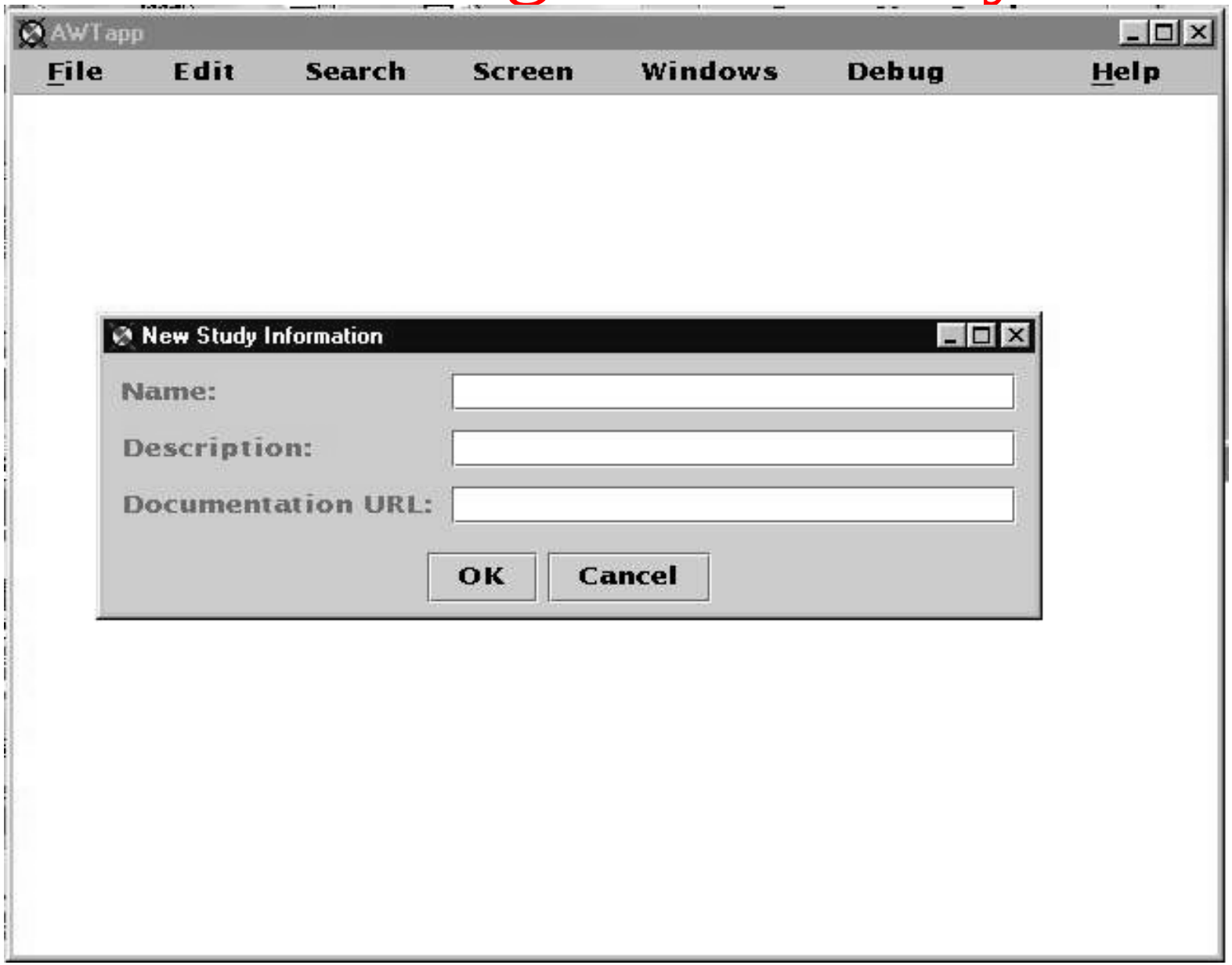
Code Editor: Importing Code

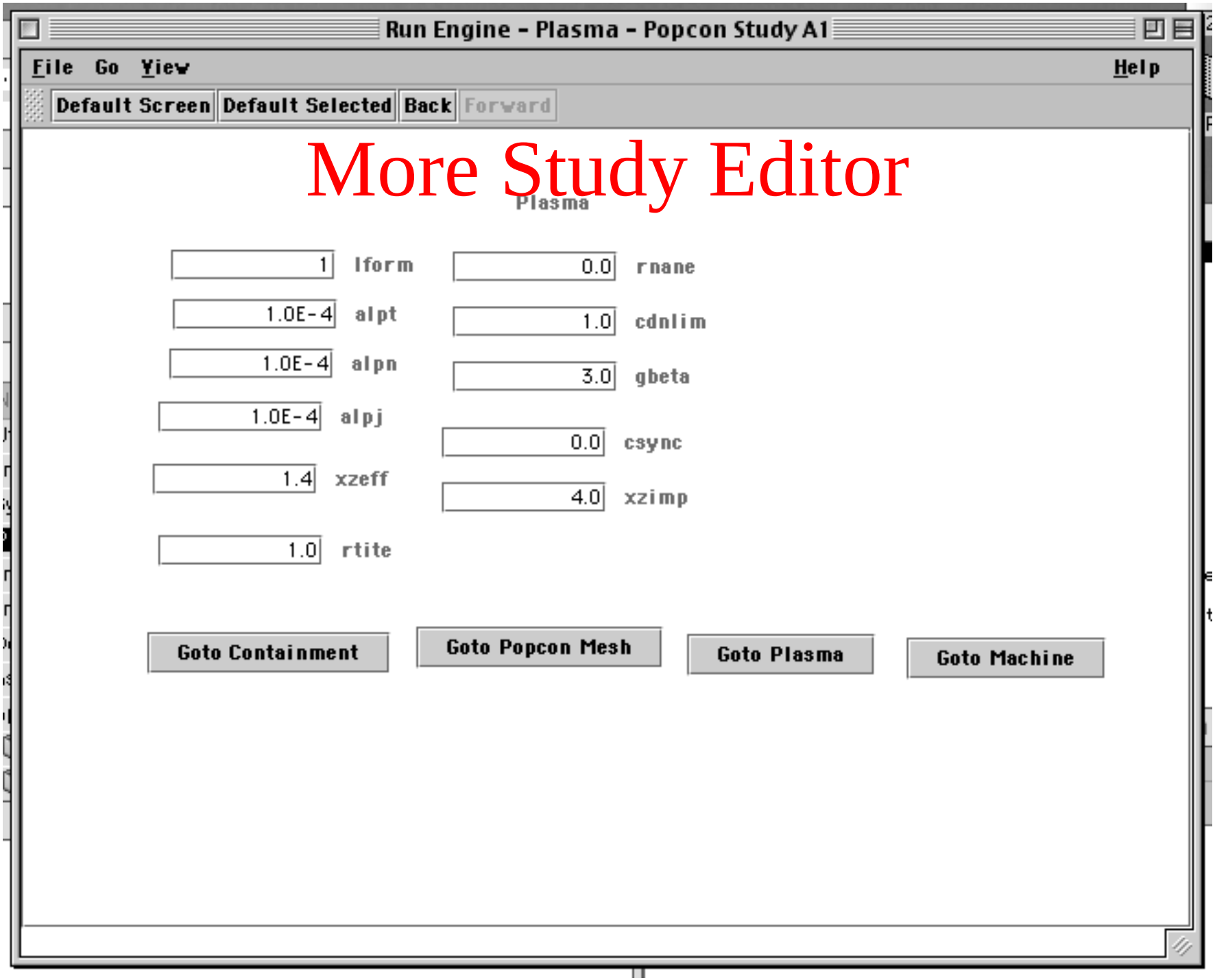
$NAMGRF
NOQPAX = 10
QPAXLV(1) = 1.0 QPAXLV(2) = 2.0 QPAXLV(3) = 3.0 QPAXLV(4) = 4.0 QPAXLV(5) = 5.0 QPAXLV(6) = 6.0
QPAXLV(7) = 7.0 QPAXLV(8) = 8.0 QPAXLV(9) = 9.0 QPAXLV(10) = 10.0
NOPAXQ = 15
PAXQLV(1) = 0.0 PAXQLV(2) = 10.0 PAXQLV(3) = 20.0 PAXQLV(4) = 30.0 PAXQLV(5) = 40.0 PAXQLV(6) = 50.0
PAXQLV(7) = 60.0 PAXQLV(8) = 70.0 PAXQLV(9) = 80.0 PAXQLV(10) = 90.0 PAXQLV(11) = 100.0 PAXQLV(12) =
120.0 PAXQLV(13) = 140.0 PAXQLV(14) = 160.0 PAXQLV(15) = 180.0
$END

$INPUT
ALPN = 1.0E-4
ALPJ = 1.0E-4
NODENS = 41
NOTEMP = 21
LTAUE(1) = 1 LTAUE(2) = 8
RMAJOR = 2.0
NPSWTC = 1
CCTAUE(1) = 1.0 CCTAUE(2) = 2.45
BTOR = 10.0
CSYNC = 0.0
ELONG = 1.8
TXP(1) = 0.0381 TXP(2) = 0.5 TXP(3) = 0.5 TXP(4) = 0.85 TXP(5) = 0.1 TXP(6) = 0.2 TXP(7) = 0.3 TXP(8) = 1.2 TXP(9)
= -0.5
RNANE = 0.0
CDNLIM = 1.0
TEMPLM(1) = 0.0 TEMPLM(2) = 20.0
TRIANG = 0.4
LFORM = 1
CURMA = 6.44
DENSLM(1) = 0.0 DENSLM(2) = 6.0
XZEFF = 1.4
RTITF = 1.0

NameList

Creating a new Study




Run Engine - Plasma - Popcon Study A1
File Go View Help
Default Screen
Default Selected
Back
Forward
More Study Editor
Plasma
1 iform
1.0E-4 alpt
1.0E-4 alpn
1.0E-4 alpj
1.4 xzeff
1.0 rtite
0.0 rnane
1.0 cdnlim
3.0 gbeta
0.0 csync
4.0 xzimp
Goto Containment
Goto Popcon Mesh
Goto Plasma
Goto Machine